# N.A.C.A. BULLETIN

In Three Sections

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## EDITORIAL DEPARTMENT NOTE

The necessity for rather extensive accounting and statistical records in enterprises of any size is now almost never questioned. Perhaps, in particular cases, this attitude has led to apathy and proliferation of papers and figures, with attendant waste. But the questioning cannot be haphazard or records and reports essential to management or important as underlying data are as likely to be cast aside as irrelevant or cumbersome matter. A set of orderly inquiries into paperwork and related procedures is set forth in our first article, based upon practical experience in the operations of a large company.

The author of the article is EUGENE R. HARRISON, Systems and Methods Supervisor, Deere & Co., Moline, Ill. A graduate of the University of Illinois, Mr. Harrison's business career dates from 1927 when he started upon a fifteen-year term of service with Underwood Elliott Fisher Co. in the sales line. In 1942 he assumed charge of costs at Voss Mfg. Co., Davenport, Iowa, transferring in 1944 to his present post.

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As the author of the second article well states, the business public must wait for particulars of developments in the office machine field. Meanwhile there are hints and hopes to go on, reports of research achievement, and a few postwar models illustrating advances. The particulars of what is needed in the way of improved accounting machines are less inscrutable. The presentation given covers this ground in a systematic and informed fashion.

The article is the work of JOSEPH S. GLICKAUF, JR., Manager, Administrative Accounting Division, Arthur Andersen & Co., Chicago, Ill. Mr. Glickauf has specialized in accounting methods and other aspects of systems work over a ten-year period. He has been with his present firm since early in 1946.

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Whatever opinions there may be to the contrary, it becomes apparent that operating accounting machines is not a form of child's play. It can be done well or done poorly. This phase of office organization becomes even more involved when it comes to integrating machine operation with the functional procedures of the accounting system. The curtain is at least partly lifted on this picture by the instances given and suggestions made in our third article.

Its author is TRACY W. SIMPSON, Methods Consultant, practicing in San Francisco. Prior to opening his own office, Mr. Simpson was with Marchant Calculating Machine Co. for a nine-year period and, among other matters, had charge of the preparation of method pamphlets related to applications of calculating and other equipment. Earlier, he was on the Methods Staff of International Harvester Co.

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# LET'S LOOK AT THE RECORDS

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ENGINEERING and production may have won the last war, but the war and a paper-minded government also increased the functions of accounting to a level never before reached. Progressive management now concedes that the accountant is essential to the operation of a business and is not just so much overhead. To the three "M's" of production—men, material, and machines—a couple of "R's" have been added—reports and records. Accountants as guardians of these "R's" constitute a control center of business. Is our accounting streamlined for the job? Are accountants to be both a guide and a part of good management, or merely historians of figures? How economically and productively they do their work will answer this question.

### *Productivity in the Office an Open Field*

Since the start of the century, clerical employment has increased some five times as fast as factory employment and the stock pile of available clerical material is quite limited. What are we doing to correct this situation? Let us be mindful of the fact that so far simplication and standardization, the measurement of human labor, and the application of practical psychology have been related to the factory, not to the office. Accounting embraces a wide field and research, with respect to the development of this field, is a prime requisite of our profession.

To record accurately the transactions of business is only a part of our job. What may be termed "control of the quality of operation" can be more important. To illustrate—we have prepared a splendid set of inventory instructions. We have installed suitable checks on the accuracy of the physical count. Similar checks and controls are established on the accuracy of the perpetual stock records. Our computed inventory is accurate and priced according to the best accepted standards of costs. Yet we are under- or overstocked simply because proper controls on procurement were not maintained.

It is generally accepted that if this country is to retain its present high standard of living, a fuller production of goods at a lower

cost is necessary. A large part of the present cost of goods is what we term "overhead." Do we accountants realize the percentage of this overhead resulting from accounting activities? The following subject matter deals with the high cost of accounting and clerical work and some of the steps that may be taken to enable us to know where and how to reduce this cost. That results may be accomplished is evident from our limited experience along these lines. For example, we are now in the process of discontinuing all current cost records involving yearly standards on material, labor, and overhead on close to 90,000 slow-moving parts.

Management is interested in cost control to the extent that it may become an effective guide towards the planning and organization of materials, machines, and men. Cost accounting, or cost control, is not concerned with figures only but with methods, procedures, equipment, and personnel. Therefore, simplicity in accounting embraces a study of the following subjects:

1. Reports and records
2. Equipment
3. Personnel

## Subjecting Reports and Records to Inquiry

Within certain limitations imposed by law, governmental regulations, or accounting customs, an accounting system should be designed and operated to enable management to effectively carry out its functions. Many accountants tend to worship figures as such and may establish accounting systems which embody detailed information not essential to the operation of the business. The problems of management tend to shift constantly. Today emphasis is on production; tomorrow it may be on sales. Is our accounting system sufficiently flexible to provide for the changes in information which we are required to provide under such conditions? The preparation of reports and the maintenance of records in which these reports originate constitutes the bulk of all accounting work. It is, therefore, important that accounting records be the subject of review for the purpose of determining how they measure up to the following requirements. A few brief comments on these requirements are in order.

### *Are They Necessary to the Operation of the Business?*

Nothing is more embarrassing than to spend time and money attempting to simplify something only to learn that the subject

matter is entirely unnecessary. Therefore, the very first step in the simplification of accounting records and reports is to apply the questions, "What?" and "Why?" This should be a continuing process rather than a periodical one. We all recognize how easy it is to perpetuate the preparation of information that has long outgrown its usefulness. Office appliance ads are full of case studies concerning the reduction of clerical time effected through the application of certain types of equipment. With all due respect to the efficiency to be obtained from office appliances, we all know that the time of an individual clerical operation can seldom be reduced 50 to 70 per cent without first eliminating part of the work involved or combining the operation with a similar task.

I am sure that very few controlling accountants have any idea of the multitude of reports that are prepared within their accounting organization. In referring to reports, I include all types of matter wherein data is recorded for the purpose of conveying information to someone else. Under this interpretation a copy of an invoice becomes a type of a report. We have found many instances in our own organization where the number of invoice copies could be reduced. In one branch house an extra copy of repair invoices had been prepared for the sales department for the purpose of recording, by dealers, the sales of a certain item. This required every invoice to be first scrutinized for the parts in question and required such sales to be transcribed to a separate record. It was found that this sales record had not been used for many years and that the labor and paper cost per year to prepare it equalled the profit of some 2,000 of these items.

To make an analysis of all existing reports you must first prepare a list of them. All records cost money to prepare. One record usually creates another. Apply this question to all reports: Is an increase in profit possible from the preparation of a report and, if so, does this possible profit exceed the cost of preparation?

### *Is Form and Content Matched with Purpose?*

To determine the right kind of a report and the extent of detail appropriate requires a first-hand knowledge of the essentials of management throughout its various levels. This is most important. A report prepared for use by a shop foreman will differ considerably from one prepared for the sales manager or the chief engineer. Let us remember that reports are made to fit the ones who will use them and not for the one who prepares them.

Cost control, or internal accounting, now covers a wide field. Accountants are asked for much information relative to the probable results under varying conditions. Many records subsidiary to those required for financial statements are now necessary. These may take the form of charts, control boards, pencil memoranda, movies, etc. Operating management is usually not interested in pretty-looking records or reports, or even accurately balanced accounts, except to the extent that they may affect the studies to be made. A frequent criticism of all written communications is that they are not understandable, that the substance is buried underneath a fancy wrapping. At present prices, let us be certain that we are paying only for the substance.

The proper form of accounting records enters a field too large to encompass within this paper. It is as endless as the argument over the respective merits of your car and my car. There is no final answer to this problem, at least not as long as we have freedom of thought. We use many different types of stock records within our organization. Yet we cannot tell you which is the best. We do not know the only correct form for our accounts receivable records, payroll records, or our general ledgers, nor do we ever expect to find that one and only answer. Our goal is simply to try to find a better way, with the knowledge that there is not any absolutely best way. We should all be critical of the records that we keep and constantly analyze them to determine whether or not they should be revised, rearranged or, repeating again, eliminated.

Large savings may be made by studying this phase of your records problem. Our company had generally accepted it as a fact that typewritten invoices are a mark of progress. We followed either of two common order and billing procedures. We either wrote a shipping order and then completely rewrote a separate invoice set or we first typed up a combination order-invoice set. Under this latter procedure, the shipping order was extended by hand and these extensions then transcribed by a typewriter onto the invoice copies. The first method required about four minutes time per page of invoicing and the second procedure about two minutes time per page for invoicing.

However, one branch house remained old-fashioned and still sent out their invoices extended in pencil. Finally, most of the other houses have gone back to the horse and buggy day. Instead of extending the shipping order in pencil, the pretyped invoice set is now extended in pencil and the billing operation and subsequent

checking of transcription is entirely eliminated. This year we will pencil-bill close to two million pages of invoices, with an estimated saving of at least two million minutes, or 33,333 hours of clerical time.

*Is Information Developed Absolutely Necessary?*

This requisite is closely allied with that of the proper form of reports and records. Cycle billing is an illustration of the application of this premise. Department stores have found with its application that itemized statements were not necessary. In some cases the original sales checks are substituted therefore. In another direction adding machine tapes are sometimes attached to remittances in lieu of a typed listing on a voucher. Most of our branch houses have recently eliminated terms on all parts invoices since these terms are always the same. In other cases we have found the territory numbers on invoices no longer serve a purpose. It is very easy to add information to a report or a record and to continue to supply it long after its need has stopped.

*Are the Reports and Records Kept Current*

To state that all records should be up to date and all reports completed on time is somewhat trite. Of course they should be, but we all know how seldom such a condition exists and when it does we become suspicious that the office force is overstaffed. However, some clerical production scheduling can be applied to the work with very excellent results. As all regular reports are collected and catalogued as to due date, by whom prepared, approximate preparation time, etc., this work may be correlated with available time and many a rush job eliminated. Very little has been done with regard to scheduling the work load of the office, with the result that nonproductive time is very high.

*Is the Accuracy Required Consistent with Use?*

Again it is necessary to determine the end result to be obtained. General ledger records pertaining to the financial status of a business and those embracing profit and loss accounts should, of course, be accurate with respect to the accounting theory that is practiced. However, the field of subsidiary records and internal accounting often permits leeway in the matter of accuracy. Sampling and various types of test checks have generally superseded 100 per cent testing and have proven adequate. Absolute accuracy is often un-

necessary in distribution work. Sales distribution is very seldom rechecked as to the correctness of the breakdown. Therefore why demand a 100 per cent accuracy as to the dollars and cents (or at least the cents) control. Often hours are spent attempting to balance a distribution of thousands of dollars worth of sales to the exact penny. Many reports to management need not be closely checked for totals, especially when the thinking is being done only in terms of thousands of dollars.

There is a point at which the cost of internal audit exceeds its value. Why not instigate internal audits of policy and procedure to determine if certain records are being prepared in accordance with sound business practice. Perhaps certain established preaudits of figures necessary for management may then be dispensed with. A stock order clerk who grossly overorders may cost the company more than one who is not too accurate in posting receipts and issues. Another point is that many controls set up tend to become perfunctory. Foremen sign time slips and officers countersign checks without even seeing the figures they verify. In some places every piece of paper passing over a person's desk must be initialed. That is all right if it serves a purpose but often it indicates nothing.

It is well to be sure that sound auditing and control principles are not synonymous with red tape. It is here we find a clash between the thinking of the protective auditor and the procedure auditor. The former tends to suggest too much control and the latter wishes to eliminate almost all controls. Working together and understanding each other's philosophy, their activities can be coordinated to provide both effective control and simplification of accounting records.

### *Are Preparation Routines Simple and Effective?*

The field of procedure analysis or work simplification, as it is commonly known, has recently received a great deal of publicity. Some authorities believe it to be the answer to all clerical problems. Work simplification is founded on the conviction that a better way can be found to perform any operation and that it is natural for people to resist change and resent improvements. It is from these two truisms that spring our two philosophies of simplification procedure. The processes of work simplification may be carried out through either of the following methods:

1. Indoctrination of the clerical force with the principles of simplification.
2. Systematic studies by a separately organized staff of experts.

Under the first method, the principles of work simplification are taught to management, the supervisors, and the workers so that they may all constructively question, analyze, locate, and correct mis-operations. The latter procedure is based on the premise that the operating force is usually not method conscious, that work simplification appears to be a mystery, and that few people realize they are doing their work the hard way or that the entire operation may be unnecessary. That may all be true, yet how often have we seen workable changes fail because the person performing the job was not sold on the change.

Fortunately, it is not necessary to follow either of these extremes. I believe that a strict, established routine tends to stifle initiative but that written procedures are valuable for training purposes and necessary for intelligent analysis. We believe that a work simplification program can successfully be carried out through a combination of the above philosophies. Rather than attempt to discuss the actual techniques of this analysis procedure, I should like to summarize our thinking in terms of an over-all program. We believe that department heads should be responsible for the efficient operation of their respective departments and that every effort should be made to inculcate in their minds the principles of sound and efficient methods. However, we realize that the responsibility vested in the heads of these departments is usually of an operating nature in that they are concerned primarily with the maintenance of established policies and procedures. Therefore, they cannot be expected to initiate changes in procedures that may require revisions in personnel and methods in other divisions.

*Has the Cooperation of All Departments Been Invoked?*

To obtain the full benefit of a work simplification program within all units of an organization, it must first have the unqualified support of top management. Second, its direction should be the responsibility of a methods department entirely functional in authority. Third, all operating employees should be given the tools for job improvement so that they will not only support and cooperate with their supervisors and special analyst but develop short cuts

themselves. Fourth, the supervisory staff must be trained to inspire and keep the program running. That cannot be done with a "We tried that several years ago" attitude.

There is no particular magic in procedure analysis. It consists of gathering together all of the facts pertaining to a certain job or series of operations, questioning each step in the process, eliminating those that cannot be justified, and arranging the remaining steps into an orderly and logical routine. Specialized knowledge may be necessary with regard to forms, engineering and office appliances used in connection with the process. Above all, the one who will ultimately do the work under the system as altered must be made to feel he has had a part in the development of a new system. Sometimes it is advisable to accept his ideas even though a slightly better method may be available. There is such a thing as the cost of too much efficiency. Above all, it is necessary to be careful that so-called standard practices or manuals do not freeze operations.

*Has a Proper Forms Control Program Been Established?*

So analogous is paper to accounting that clerical work simplification is often termed paperwork simplification. The paper cost runs into a sizable figure in most concerns. But this cost is only incidental compared to the investment it represents in clerical salaries, floor and filing space, and office equipment. In most instances, both the paper cost and the handling cost are probably excessive. In order to initiate standardization of form construction, standardization of forms used for same purpose, efficient form design, and paper conservation it is necessary to maintain some sort of a centralized control of forms. This does not necessarily mean centralized purchasing nor control of certain miscellaneous forms peculiar to every office.

The study of any form should embrace a study of specifications, design and type, and necessity and use. Under specifications it is necessary to determine:

1. Economical grades, weights, sizes, and colors of paper.
2. Possible standardization on basic form sizes that will meet the functional requirements of usage, filing, and mailing.
3. Economical printing runs.
4. Application of standard forms available through outside suppliers.
5. Printing costs.

Design and type of form should consider:

1. Standardization on logical sequences and arrangement of copy to eliminate errors and loss of time in recording, transcribing, and reading of data.
2. Appearance.
3. Whether or not the form is suited to the machine or machines on which it will be processed.
4. Proper type of multiple-copy forms adaptable to specific purposes.
5. Reproduction processes available.

Necessity and use should embrace:

1. Elimination of duplications in existing forms.
2. Elimination of obsolete forms.
3. Elimination of unnecessary forms.
4. Possibility of combining related forms for simultaneous writing.
5. Consideration of the actual office flow of printed matter to determine both the efficiency and necessity of each form or part thereof.

As previously stated, the functional or use phase of a form control program offers greater possibilities of savings than the mere cost of paper. Necessarily, that portion of a forms program overlaps and ties in with both methods and equipment analysis. However, we should not overlook the physical properties of forms. Substantial money savings may be obtained from that part of the program and with less effort.

*Has a Records Retention or Disposition Program Been Set Up?*

Everyone will agree that a certain amount of uniformity is desirable with respect to the disposition of records. A definite retention schedule covering all regular classifications of records is advisable. Provision must then be made for an organized procedure covering the actual retention or destruction of records rather than to rely on the "house cleaning" urge. The number of sheets of paper prepared or received in one year by an average sized concern is tremendous. Often it is in the millions. Many records must be maintained indefinitely because of their historical or legal value. Other records must be retained for definite statutory periods. And there is a group of extraneous matter that can best be eliminated as soon

as it has served its initial purpose. Most correspondence is of this latter type. In many instances duplicate file copies exist which may be periodically destroyed, retaining only one copy for future reference.

When records are preserved, suitable facilities must be provided for their storage and they must be so arranged, classified, and indexed as to permit future location. The application of microphotographic equipment should be studied. The possibility of future reference must be weighed against the accessibility desired. From a legal standpoint it may be necessary to retain certain records for a period of years, yet the possibility of reference is almost nil. Records of this type may be bundled together without particular regard to accessibility.

The vesting of final authority for the formation and execution of policies on this subject will vary with different companies. The preparation of the schedules should probably be vested in a ranking finance officer. Many concerns depend on their department heads to execute and interpret the policies already formulated. Other concerns prefer to delegate the execution to the accounting executive or the office manager. It is recognized that the retention of records is a necessary and often valuable part of accounting control and, as such, must be the subject of serious consideration. However, it should also be remembered that the waste basket is an ideal file for many pieces of paper that have served their purpose and may better be discarded at once than in the future.

## To Mechanize or Not to Mechanize?

Office machines constitute only a part of related office functions and their application must be considered as such. Perhaps we are likely to overemphasize the importance of mechanization. Not long ago one of our offices made a time study of the entire process of posting accounts receivable. The machine posting time was determined to be 18.5 seconds per invoice. The time to sort into posting sequence, run control tapes, and sort back into numerical sequence for permanent filing was almost the same, 16.1 seconds per invoice. During the last twenty years the application of machines to this job has been improved several times through both new and different types of equipment. But another related operation (as instanced), taking about the same time, has been considered a minor routine job and has received only passing attention.

*Equipment Selection and Use an Exacting Task*

In most offices, machines are not operated on an assembly line basis. Time a clerk as she types up one invoice. Then check her daily production. Invariably the spread is much greater than is experienced in factory production. Therefore, it is dangerous to apply office machine production capacities to volume requirements without a large lost time factor. Wonderful results can be accomplished through the proper application of office equipment. Yet often very little intelligence or research is applied to the purchase of office machines. Seldom are competitive makes thoroughly investigated at the initial installation and even less often at the time of replacement. Purchasing agents, accountants, and office managers all probably know less about the respective merits of office equipment than do buyers of any other type of facility.

Before purchasing equipment, the procedure involved should be studied. Simplify it, eliminate it, streamline it for hand methods, and then consider it for machine application. Mechanization will then be most effective. Except for rare exceptions, claims of tremendous savings through mechanization are admissions of previous inefficient routines. The advent of cycle billing is an example of what a new procedure will accomplish. Machines for retail customer billing have undergone many improvements over the past twenty years to increase the speed of posting. Along came cycle billing—a revised procedure. Now one machine will do the work that about three did under the old statement and ledger plan. With regard to mechanization generally, another point may well be made. It is not necessary to save a large percentage of the time required for an operation to justify its adaptation to mechanical methods. Under present wage scales, a ten per cent savings may warrant the use of machines.

There are, of course, certain office operations, like the writing of letters, that are automatically classified as machine jobs. We are not concerned with jobs of that category but primarily with those that offer several methods of execution. As an example: 80 per cent of the extensions on our parts invoices are covered by multiplications of prices ranging from one cent to one dollar times quantities from one through six. The main question that then arises is—Should the original calculation be mental or mechanical? However, when checking the original calculation by an accumulative method, the machine application is accepted as

proper. The question then is which type of calculating machine is best adapted to the operation?

*Paper Handling and Lost Time*

The handling of paper is a prolific source of lost time. Sorting and filing time constitute a large per cent of the day's work in the average office, but it is often accepted without analysis as to the degree of efficiency that exists. Multiple-copy forms have saved many a rewriting job, but the philosophy that an extra copy doesn't cost much is not always true. It may cost only a fraction of a cent in paper cost but many cents in handling time before it is laid to rest. Beware of the parasitic copy. Many accounting dollars can be saved by close attention and study of the proper application of equipment to filing, sorting, and handling procedures.

Finally, don't overlook the value of gadgets in the modern office, those so-called small mechanical devices, often home-made, that some enterprising clerk thought up because he was too lazy (or was it progressive?) to do a job the hard way. They may range from a small template to a funny looking functional desk pieced together down in the shipping room. Many of the office devices now on the market had their beginning under similar circumstances, and many are the clerical hours that may be saved through their application.

## People and Methods

The most important of our three subjects is people, personnel, if you prefer terminology. It is they who must operate methods and machines. Accounting, being sometimes conceived of as an exact science, has tended to evade the issue of costing that variable and intangible factor of office cost, the clerical worker. Why not present a balance sheet statement to management on personnel? Lack of character rather than ability is responsible for 80 per cent of the failures in clerical work and, no doubt, incompetent office work has been largely responsible for the large increase in office employment. Cost control must recognize this fact and give proper emphasis to the training and supervision of those actually preparing our accounting records. No other single factor offers the same opportunity to reduce overhead.

*Scientific Approach to Office Productivity Needed*

In very few instances have job standards been established for office work. Consequently, we can only guess at the percentage

of clerical time that is productive. Certainly average productive time, or what is called "effective working hours," is not over six hours per day and, in many cases, clerical workers produce at less than 50 per cent of their potential capacity. Part of this lost time is due to poor job methods and uneven work loads, but a larger part is due to a lack of proper personnel selection and subsequent training and supervision of the employee.

Many concerns now show their capital investment in each employee. The accounting records we keep on this capital are the subject of careful and accurate preparation and are usually quite concise as to details. No doubt many concerns know the work load of a screw machine, the actual load obtained, the cost of maintenance over its life, and its present state of health. Yet how many of us keep the same records on the state of health and, more important, the state of mind of our office employee. We neither know his potential load capacity or his actual output. In many cases we do not even know the load requirements of his job.

Our investment in people is many times our investment in plant and equipment. The equipment salesman knows this when he talks labor saving. Theoretically, a $100 investment in equipment needs to save only slightly over two minutes of clerical time per day to pay for itself. Perhaps if we were to set up the worker as a capital investment of some five to ten thousand dollars when he is employed, we would then be more apt to justify and control this expenditure. Actually, the investment per office employee is much greater today than it has ever been. This is particularly true with respect to possible supervisor and executive material. What I mean is that today the employer must subsidize the employee through higher wages during his training period, whereas in the past the employee stood a part of this training cost by sacrificing current income for future emoluments.

*Importance of Training and Supervision*

More has been done with respect to the application of scientific methods in employment than with subsequent training and supervision. A broad program is necessary to not only give the employee proper training in job techniques but also a comprehensive understanding of the entire business process. The worker must be made to feel that he is a part of management and that he is also socially and mentally acceptable to his fellow employees, if he is to maintain a state of mind conducive to maximum produc-

tion and efficiency. It is necessary that he have an over-all knowledge of the office organization and his part therein. I know of instances in which an individual performed part of a related process for over ten years but did not know what occurred after his task was completed.

Proper supervision is a key to lower clerical cost. Technical knowledge will not alone provide for proper supervisors. We found that out in the factories and proceeded to correct the situation through various foreman training programs. A supervisor must have energy and enthusiasm to pass on to his staff and, above all else, infinite patience and human understanding. Yet probably not one supervisor in a hundred has ever studied psychology. Someone has said that a good office manager or supervisor should be three people: first, an analytical and technical individual who can gather and assemble facts in an orderly and intelligent manner; second, an energetic individual who will see that things get done in a hurry; and third, the salesman or "soft-soaper" who sees to it that the organization is running smoothly and who soothes the hurt feelings engendered by the "go-getter."

Proper supervision may be implemented by a job evaluation program with definite rate ranges. Under this program, management must be responsible for providing the opportunity for advancements, so that the worthy employee is not held within a set range.

## Conclusion

What has all of the above to do with the application of simplification principles to accounting practice? Simply this, a happy, enthusiastic, intelligent office staff will not tolerate inefficiency and red tape in clerical procedures. They, too, have read that oft-repeated writing of Kipling's:

> "I kept six honest serving men;
> They taught me all I knew.
> Their names are 'Why?' and 'What?' and 'When?'
> And 'Where?' and 'How?' and 'Who?' "

If the members of your staff often come to you with ideas and suggestions for simplifying their work, you have laid the basis for reducing the cost of your accounting. If they do not, it is time to sit up and take action.

# WHAT WILL ACCOUNTING MACHINES DO?

by JOSEPH S. GLICKAUF, JR.,
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NECESSARILY, we can have no certain knowledge of what is on the drafting tables—the accounting machine companies are, understandably, somewhat reticent on this subject. But the known developments of recent years afford some clues of what may be just ahead. We can also be quite certain that business needs and requirements will give rise to responsive developments in machine features. However, for the time being, past developments and what our own problems tell us ought to be developed are the safest guides to what roads we may guess machine accounting will follow in the future.

They are not conclusive guides of course. It would be very nice, for instance, to have a device which would permit all banks to be automatically self-balancing without help from human hands. This does not mean that such a device is to be expected forthwith. Nor does the existence of, say, a paper-handling volume problem mean that a mechanical solution is economically feasible now. Yet the clues are interesting and deserve exploration. In following up these clues, I would like to side step the smaller specific problems which are, practically, often quite important and to assume that all machines are accurate, rugged, and manageable, require minimum maintenance, and are suitable in shape and appearance. With these virtues assumed it will be possible to direct attention solely to functional demands on mechanical equipment. These may be classified as demands for speed, capacity, and flexibility and are considered below in that order. In addition, special mention is made of flexibility in two of its forms, remote control and mechanical aids to manual operations.

## Speed

Considerable development may be anticipated in machine speed. Great strides have already been taken in this direction. Present day calculators are a far cry from those available fifteen years ago. Electronics have been used in some types of equipment to increase operating speed to the point where the theoretical limit is the top speed of the moving metal parts of the machine. Billing

machines have long been developed to the point where the question of speed rests on the operator, not the equipment. It may seem pointless to speak of increasing the speed of any machine which has already surpassed even the peak speed of a theoretically perfect operator. Nevertheless, the time required to handle the details of a month's transactions typically results in late closings. Late closings mean delays in getting figures to management and subject both accounting and the accountant to criticism. We thus have a real problem.

Many of its aspects have nothing to do with mechanization of accounting and typical corrective measures customarily have their origins in areas far removed from accounting machines. A rearrangement of general ledger accounts to approximate more closely the order of monthly statement captions and perhaps even outright changes in the chart of accounts to facilitate statement preparation, can often accomplish a great deal. So can earlier—and *insistently* maintained—cutoff dates for the closing of detail records involving considerable account distribution. Matters lying deep behind the reported results, such as inventory pricing or shipment procedures may be delaying factors which can be speeded up only by changes (possibly fundamental changes) in the system.

*Types of Improvement in Machine Speeds*

The problem is of such significance that I feel confident that machine speed improvements will play their part in helping solve it. I look for this development in three channels:

1. Further increases in speed of operating features such as transmission of key impulses, carriage movement, and tape or form feed.
2. Increase in the speed with which an operator can work through changes, refinements, and improvements in form-feeding arrangements and in location of keys, stops, etc. In such a simple operation as striking a subtotal on an adding machine, the differences in key placement and arrangement among half a dozen makes indicate pretty clearly that possibilities along this line are far from exhausted.
3. Increase in the aggregate amount of work handled by an accounting machine operator by more efficient location of machines in relation to the source or result of the work. This is technically not a question of machine accounting, but it seems to me it is quite as important to the machine

companies as the design of their product. We are too used to centralizing one or more machine accounting functions in a space which has been selected because it is convenient to the area supervised by the chief accountant, or merely because it is not otherwise in demand. Wholly inadequate attention has been paid to the question of whether an accounting operation would be faster over-all if it were handled in toto, machine applications included, in physical proximity to either the source of the data or its final disposition.

Two examples will help illustrate this last point. The typical savings bank has faced the problem squarely by placing an accounting machine at each window or group of windows. The teller handles the deposit or withdrawal and does all the bookkeeping at the same time and place. Again, I know of a large company which makes extensive use of punched card accounting and has two tabulating departments. One is extensively equipped with the equipment company's full line—a veritable salesman's dream. The equipment in the other department consists of a single mechanical sorter. This sorter is used to sort prepunched cards received by mail from customers, and for that purpose alone. It is located in the department handling the customers' inquiries, where it rapidly does a job which used to take several full time clerks.

*Possibilities of Automatic Sensing*

I suppose that the optimum in speed would be a machine which would itself automatically sense the figures to be added, posted, or distributed. Equipment is already available in the punched card field which senses pencil markings in designated and rather exact locations on a card and translates them into punched holes. Wider use of such a principle outside the punched card field should offer possibilities.

I can visualize a payroll machine which would automatically distribute the payroll charges to the correct account. A time card would, perhaps, be placed in a designated reading zone. While the machine operator entered other data on the keyboard, the machine would automatically sense the account distribution from printing, marking, or other designation on the card, or even from the color of the card. Removal of the card would give the impulse to register the time charge in the appropriate distribution register. I am not a machine designer, nor a patent attorney,

nor enough of an inventor to know whether such a device is feasible or economically practical. I only know that it would eliminate one operator's movement which is performed countless times each payroll period.

As the optimum in gazing at this section of the crystal ball, think of a machine which would automatically print a columnar voucher distribution from carbon copies of vouchers passed through it at high speed!

## Capacity

Capacity is something else that accounting machines could use more of. Here again the machine companies have not been asleep. Several postwar models have a register capacity well in excess of that available a decade or so ago. Capacity, in one form or another, is a fundamental of machine accounting. The ability to make sumiltaneous machine postings on three forms is basically a matter of capacity. The machine completes three forms instead of one. The success of the electric typewriter in billing is a matter of capacity through the adjustable stroke.

### *Register Capacity and Stock-Pulling Operations*

Great as the progress has been, however, there is still much to do along capacity lines. One striking example of an unsolved problem is the question of the adaptability of an accounting machine to mail order sales distribution. In a mail order operation, the order must be registered and distributed by merchandise departments or divisions. Stock tickets must be prepared so that the order can be filled from the bins. However, the number of merchandise divisions frequently exceeds the number of registers in an accounting machine. Since the operation affects both sales and inventory, a complete and accurate distribution is essential. In the absence of machines with sufficient register capacity, manual methods are used instead, with an increase both in the possibility of error and in the size and cost of the clerical force. Department stores are faced with a comparable problem in distributing sales by departments and sections. A similar situation exists in any large stock-pulling operation.

It seems to me that an accounting machine with an increased register capacity adequate to handle the average distribution problem would find a ready market. Existing machines can make up stock tickets and accomplish a certain amount of sales analysis.

The solution would be in greater capacity rather than radical changes. The problem is widespread enough to justify a solution.

*Punched Card Column Capacity*

Punched card accounting offers a solution to the sales distribution problem with a virtually limitless capacity for sales analysis. Whether or not it is the ideal solution in any given situation, cannot be answered in generalities. In any event, the punched card itself is by no means a stranger to the problem of capacity. Present punched cards and punched card accounting machines are limited to a fixed number of columns, varying with the make of equipment. None has sufficient columns to contain, in one card, enough punching for a customer's name and full address plus extensive dollar and statistical data such as that often required in public utility billing.

The punched card companies have faced the problem squarely and several alternative solutions are in use. One is an increase in the alphabetic capacity of the punched card equipment by mechanical changes. Another is the coupling of punched cards with addressing equipment in such a way that the dollar and statistical data on the cards are mechanically combined with the correct address information. Both approaches are in satisfactory use and offer interesting possibilities in many applications in addition to public utilities. Nevertheless, an increase in the number of columns in the card, and consequent changes in the equipment to handle the larger card, is bound to come. One hears talk of an impending development of this character.

Such a change has a great deal to offer. An increase in card column capacity would give an answer to the name, address, and data question. It would present a new and admirable approach to standard cost records with adequate description of operations. It would increase the effectiveness of punched card cash disbursement and voucher mechanics. In addition it would result in more informative punched card inventory records. Other possibilities could be mentioned readily.

*Ticketing Operations*

Another specialized but very interesting answer to the capacity question is worth mentioning. Everyone has had the experience of standing impatiently in line at the railroad station while the ticket agent laboriously made out coupon after coupon of an inter-

line ticket for a prospective traveler. Within the past year or two ticketing machines have made their appearance, on an experimental basis, with the objective of cutting the time required in the ticketing operation—and the temper of the waiting line. One machine in the pilot model stage is essentially a capacity increase alteration in the ticket vending machine in use in practically every motion picture theatre in the country. This machine prints and ejects interline tickets with a number of coupons, prices the ticket and the various roads' shares, and accumulates the requisite sales statistics with speed and dispatch.

## Flexibility

Cost is a significant consideration in any decision between a manual or mechanized accounting operation. In this area, the purchase cost of a machine may very well be controlling. One often hears it said that "machines do not pay if there are less than (so many) employees on the payroll" or "manual methods are cheaper with only (so many) customers." Such murmurings are not without justification. Perhaps there is no machine in the prospective user's price range which will handle several or more such functions with equal effectiveness. Any one machine should be adaptable to an increasingly large number of uses. Otherwise its contribution to the accounting effort will be limited to part time.

### *Adaptable Features Now Available*

Flexibility is no new concept in machine accounting, as evidenced by a number of current machine features. The following are examples:

1. The common alphabetic-numeric bookkeeping machine.
2. A multiplying device built into an accounting and posting machine.
3. The "two speed carriage" permitting the same information to be posted simultaneously to two forms with different spacing.
4. Variable counters and registers, permitting the operator to change the patterns of subtotals and totals or the degree of analysis.
5. The mechanical sensing feature adapted to addressing equipment, as mentioned earlier in this paper.

6. A changeable "control plate" or other device which permits the selection of various applications of the same machine.
7. Adaptability of the proof tape section of the machine as a straight adding machine.
8. Various features of punched card tabulating equipment, beginning with the wiring panel itself.

These and comparable flexible features have in a large measure been responsible for some of machine accounting's greatest strides. They have made mechanization possible in the case of many companies in which it would otherwise have been impractical or perhaps uneconomical. For example, the use of a two-speed carriage makes it possible to prepare a stock ticket as a by-product of typing the order and invoice, without involving any high cost equipment. The punched card field has an increasing number of special attachments to convert ordinary equipment to new uses.

*For Flexibility On A Broad Front*

What remains undone in the flexibility field? Well, several things. One that is very familiar is the matter of payroll computation. The country is well filled with clerks extending hours times rate, usually on a calculating device, because most accounting machines will not handle that function in conjunction with other functions necessary to prepare a payroll. Other clerks, in like numbers and for the same reason, busily extend material tickets by similar means. This question is obviously being worked on. If it were not, we would not have what multiplying features there are. But more work is needed before it can be said that flexibility has been combined with simplicity on a broad front. Another gap is the matter of telephone toll billing. Under the old-fashioned—and current—method, the toll operator writes up a ticket for each call. This ticket becomes the accounting medium. If preparation of the ticket could be automatic, or even semiautomatic, and the result used in the rest of the accounting directly and without transcription, a good many thousand hours would be saved every month or perhaps every day. Mechanical solutions to this problem are also in the development stage.

## Remote Control

There are two kinds of flexibility that deserve separate mention. One I will call remote control. This is not a feature which I expect will be built into all types of accounting machines, but

it does have possibilities (and existing uses) which augur its greater application in the future. Some of these existing uses are:

1. An eastern railroad is experimenting with a combined teletype and a key punch for freight and car accounting. An operator at one yard point can operate a punch which will produce punched cards at another yard which may be many miles away, thus creating accounting media at a distance without waiting for the mails.
2. A mining company records orders on the teletype in the home office, thus simultaneously producing identical copies at the point of shipment and the point of billing.
3. Hardly anyone present has not at some time patiently heard his wife describe the length of the lines in the self-service grocery. A far-sighted citizen has invented a machine to help lessen this waiting time. The shopper makes her selections, obtaining for each a perforated slip from a handy gadget nearby. The checker feeds these slips into the machine which tumbles the right quantity of each item selected onto a moving belt and speeds the lot to the packing desk. The machine also figures the amount due.
4. Another wholly familiar task is the making of plane or train reservations. Several machines have been developed which control reservations at a single central point, giving a mechanical answer in a matter of seconds as to whether the space requested is available. They also mechanically record reservations of available space. What information I have been able to gather on this type of equipment does not include its cost, but its appearance and performance are sufficiently impressive to suggest that this may not be minor.
5. I understand that consideration is being given to a device which would make the meter reading and billing activities of a public utility almost completely mechanical. Under this plan, the customer's meter would be fitted with a set of variable punches synchronized with consumption. The meter reader would insert a card in a slot and the punches would punch cumulative consumption in the card. Equipment already in use has completely mechanized the calculation and production of the customer's bill. This additional feature would limit the manual operations in the billing cycle to two—putting the card in the slot and taking it out again.

*Fancy Free—Seriously*

How extensive remote control possibilities may be is anybody's guess. At least there are chances for plenty of wishful thinking. Imagine a factory timekeeping system providing for automatic registration in the office, on a medium readily susceptible of analysis, of job hours and actual production by workers! Or picture a warehousing operation where a single clerk equipped with buttons could instruct the manual or automatic dumping of desired items on a belt or conveyor, and make the necessary accounting record at the same time. Things like these should be possible. How practical they may be is another matter. However, there are enough indications of remote control features already in use to suggest the probability of further development in this fascinating field.

## Mechanical Devices for Manual Accounting

No discussion of flexibility can be complete without some mention of mechanical or semimechanical aids to manual accounting methods. What I have in mind is the whole field of devices which, without direct employment of machines as such, simplify the manual performance of the posting and distribution functions. This field includes reproduction processes to prepare copies of source documents for numerous purposes without extensive transcription. It include pegboards and needle sorting. It includes various aligning devices for the accurate simultaneous posting of several records from a single longhand posting.

This last type of device has gained considerable popularity in the payroll field, particularly among smaller companies. It appears to be both economical and effective. The principle should be equally adaptable to other types of related records, such as sales, accounts receivable, and customers' statements, or vouchers and account distribution. In fact, several devices embodying these extended applications are already on the market. There are, and there probably always will be, companies whose officials do not consider accounting machines soundly adaptable to their situations. Semimechanical boosters to the time-honored manual methods of accounting offer real advantages to these companies. It seems entirely logical that there will be continued and new developments to serve this field.

### Controls

One feature of machine accounting systems which will have to receive more attention and emphasis is the whole question of maintaining and implementing internal control. Accounting machine company representatives have not, taken as a whole, given this subject the attention it deserves. Yet they know more about their equipment than their customers do. Control refinements are thus usually left to the user, who may be better versed in cross-checks but less so in machine technique. We have then, no general combination of the fullest understanding of *both* (1) machine features and limitations, and (2) the elements of internal control, brought to bear together.

I do not by any means intend to imply that lack of internal control is rampant in machine accounting or that there are not many situations which have little room for improvement. I do say that I have seen enough weak spots to warrant repeating just one familiar thing. Despite the assumption made earlier in this discussion, no machine is so perfect that the chance of mechanical failure is completely eliminated. Neither can the possibility for human error be removed from an operator's work. The effective use of machine accounting dictates that adequate safeguards be established, independent of self-contained machine operations, to minimize the chance of any such errors carrying through into the accounting results. This is not a talk on internal cross-checks and any excursion into the various control methods would be out of place, but it would be equally out of order to avoid mention of a principle which is so basic in successful mechanized accounting.

### *Conclusion*

Earlier it was said that we are without any certainty of what the machine manufacturers have in the development stage. It may very well be the case that much of the wishful thinking included here has been reality for some time. I hope it has. I shall feel no chagrin if something I look for in the future is already here. I know that many of the features which have been mentioned will come, and on a large scale. The accounting machine companies have already proved that they are properly susceptible to the murmurs of the crowd and have done a magnificent job in making their indispensable contribution toward the translation of our work from bookkeeping to accounting. I feel confident that their development work is marching steadily ahead.

# SIDE LIGHTS ON METHOD ANALYSIS IN THE MECHANIZED OFFICE

by TRACY W. SIMPSON,
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THE new office manager let his eyes wander over the office which he hoped would be his business home for years to come. The capable appearing clerical personnel were busy at their tasks. The office machines were clicking steadily—a cadence of industry and efficiency.

### *Unnecessary Operations*

He glanced toward the desk of Mary K who was vigorously adding by the touch method, using only the lower five keys. He watched her for a minute when something struck him as not just right. Why were the sheets not being shifted more rapidly to the "finished" pile? He could see, even from the distance, that she was adding a column and then re-adding. But had he not been informed that all checking was done by a different operator? Sure enough, at a nearby desk Ann L was checking the same additions.

"Why do you add twice, Miss K, when Miss L is supposed to be your checker?"

"I've always done it this way, Mr. Jones," Mary replied. "Isn't it right for me to be absolutely sure—so Ann will find as few mistakes as possible?" He explained that her method, though well-intentioned, was unfair to the firm that paid him and her a salary, because it meant that each column was added three times, when double adding by different persons provided adequate accuracy control.

The case cited typifies the frequently encountered violation of instructions given to the operator when trained, or as included in the office manual. However, such violation is seldom willful, mostly a combination of inadvertence and caution. In this category fall many of the common inefficiencies of business machine operation: registers not brought in balance in accounting machines before starting each batch, eight or ten orders of a calculating machine "divided through" merely to obtain a few figures of quotient, decimal markers not used, more figures used in the fac-

tors of a calculation than required to produce the number of figures to be retained in the result, too many sorts of punched cards to obtain the needed segregation, failing to take advantage of obvious short cuts, etc.

Not the least of these operator lapses is neglect to utilize the full possibilities of the machine itself. An operator is known to have gone on for years reaching out to clear a dial by a hand movement when the dial would have automatically cleared itself at the next stage of the operation, had it had the opportunity of doing so. Cases like these respond to attention by anyone in a supervisory capacity who will dig into the details. Unfortunately, these inefficiencies sometimes continue longer than they should because the department head, though highly qualified in other respects, is not overly familiar with machine operation.

*Short Cuts in Checking: The Circle Proof*

It is not so easy, however, to solve the next class of inefficiencies which for want of a better term may be designated as method waste. These are the cases where the procedure is not adapted to the work if it is judged according to best standards. Often the whole setup needs revising, involving the work at many desks and upon many machines. Of these cases one of the most fruitful in possibilities for saving is that associated with proof. Double calculating for proof is often a dictate of a supervisor not fully informed as to alternative proofs. If one seeks diligently, there usually will be found some way to utilize a predetermined total to which the derived amounts should add. If not, often a circle proof may be discovered by which all steps are proved by visually comparing final amounts with those at some prior stage.

An example of such a proof, which illustrates a principle adaptable to many uses other than the one described, may be helpful. The work comprises inventory extension from bin cards, together with machine writing of the inventory sheets. Bin cards of the same commodity are stapled together, quantity recapped to the top card, and the latter priced. The calculating and writing cycle is:

1. Enter unit price and quantity in calculator, which produces extension.
2. Copy extension from calculator to bin card.
3. Turn to writing machine and record quantity, unit price, and extension from *the dials of the calculator* (not from the bin card).

4. Move bin card to right, compare its quantity, unit, and extended amounts with those now shown on the inventory sheets, and record description.

If decimals are properly set on the machine, this provides a satisfactory one-person circle proof. If a two-person proof is required, have the checker (who need not be a machine operator) repeat the visual comparison of step 4. In either case, it may be noted that this method is as effective as the usual double-calculating procedure, and locates the following kinds of errors:

1. Errors of entry into calculator of either quantity or unit price.
2. Error of copying control figure (step 2) to bin card.
3. Errors of recording quantity, price, or extension in the machine writing of the inventory sheets.

Some may question whether in step 3 the operator will write from the dials instead of from the bin card. She will, because the figures in the dials are larger and closer to the accounting machine. The fact that she is instructed to do the work in this manner has a bearing on it, too.

*The Approximate Proof*

Though it may sound as heresy to some, many situations require only approximate proofs. Per cent of increase is best proved by multiplying prior period amounts by one-plus-per cent increase, expressed as a decimal fraction, which produces current period amount to four or five significant figures, assuming per cents are stated to nearest hundredth of one per cent, and similarly for decreases. This method in one instance reduced proving time by two thirds. Approximate proofs may be satisfactory for stores requisitions, job tickets, etc.

Simple nomographic charts are well adapted to approximate proofs and they are also useful as a check of other work because decimal point errors are absent. With such a chart it is only necessary to connect points on two parallel lines (which "scale" the two known values) with a transparent ruler and to read the result where the ruler crosses a properly placed intervening line. For example the two value lines may be graduated in dollars of distribution base and dollars of expense, respectively. The result line would then be scaled in relating percentages. Nomographs are suitable for approximation of proof of A x B equals C, A di-

vided by B equals C, or problems that can be reduced to these forms. Each nomograph accommodates a reasonably wide variation in the amounts, usually sufficient to cover the range found in the work.

Nomographs provide substantially the same accuracy as a ten-inch slide rule, but they have the advantage over the rule in that they are easily operable by office staff. This is not generally the case with slide rules, to the despair of those who feel, as does this writer, that this useful tool should have more of a place in the office than it has.

*Simplifying Basic Distribution Calculations—An Example*

To secure a suitable end result with the least clerical and computing expense often requires the exercise of much ingenuity as well as knowledge of figure work procedures. An illustration may help on this point. In a large chain-store trucking operation, goods of various classes and weights are moved from a central warehouse to the individual stores. It is desired to allocate the total trucking cost to the various classes of commodities so each may be charged with an equitable share of the delivery cost. Alternative plans are studied as follows:

1. Divide total trucking cost for month by total tons carried. Multiply weight of each commodity by this average cost per ton.
2. Same as 1, except that, from record of miles between each store and warehouse and of weights of each commodity delivered to each store, the total ton miles is obtained as well as ton miles for each commodity. The allocation of expense is then based on ton miles instead of tons.

As these methods do not consider inherent differences of operating costs of various kinds of trucking equipment—long-distance tractors with trailers, short-haul trucks, pick-ups (new, old, in good or bad repair) methods to take these into account are considered, as below:

3. The trucking cost for the month is found for each tractor and its associated trailers, or for each truck. This is divided by total tons (or ton miles) of all commodities carried during the month by the unit of equipment. The result is then multiplied by the tons (or ton miles) of each commodity carried by the unit during the month, thus al-

locating the trucking cost of each unit of equipment to the respective commodities. The total of such charges to each commodity, arising from all of the units of equipment, is the desired monthly commodity trucking cost.

4. The trucking cost of each trip of each unit of equipment is obtained. This is divided by total tons (or ton miles) of all commodities carried on the trip. The result is then multiplied by the respective tons (or ton miles) of each commodity carried on the trip. These amounts are then recapped by commodities to show total charge to each.

Analysis showed that the ratio of ton miles to tons in any warehouse area was approximately constant from month to month, as would be surmised because the number of stores varied only slightly from year to year. The use of ton miles as an allocation base was thus ruled out—though it could not have been had the object been to allocate trucking expense to each store instead of to each commodity as viewed from the warehouse as a center. Otherwise, of course, the far distant stores would be unduly favored.

Plan 1 was also eliminated because study showed as much as 25 per cent variation of commodity charges as compared with the more exact allocations of Plans 3 or 4. Study showed that Plan 3 required about 10,000 fewer multiplications and divisions per month than Plan 4, and also that the charges to commodities found by either plan were closely alike, the variation being less than that caused by known uncertainties of the basic assumptions. Plan 3 thus appears to be the most practical solution. The money value of the difference in cost of clerical work between it and Plan 4 was estimated to lie between one and two thousand dollars per year for each warehouse area.

*The Method Instruction Pamphlet*

The result of the method analysis is normally incorporated in the office instruction manual where it is shown as applied to the actual machine used upon the work. Experience indicates that such manuals are preferably in the form of individual method pamphlets applying to one person's work on a single task. Supervisors may have these bound in loose leaf, if well indexed.

Two types of material appear to be properly includible in such manuals: (1) basic "how-to-operate" procedures such as how to divide, how to multiply, when to use reciprocal division, how to set

registers, how to correct registers for errors known to occur, and (2) machine operating and associated routines for producing each kind of report or business paper which has to be produced in any quantity.

Whatever the kind of instruction pamphlet, the minimum requirements seem to be:

1. An outline diagram of the machine showing every control setting for the work to be done. This reduces the descriptive part applying to this matter to the words, "Set controls and decimals per diagram."
2. A numerical example closely similar to the work. If it applies to a definite business paper, samples of the form should be shown in various stages of completion or, if it is believed that a single sample form will suffice, the lines and columns should be clearly numbered to identify specified amounts.
3. A detailed step by step description of the manner of producing the result covered by the numerical example.
4. A brief outline of the underlying mathematics, expressed in terms of simple arithmetic.
5. A "memory jogger" or summary, of not to exceed one page, which gives items 2 and 3 in greatly abbreviated form. Reference is made to it by those who have done the work before and do not wish to wade through the method pamphlet.

The above plan results in a method pamphlet that is about as palatable as such a thing can be. Though machine operators and clerks are supplied with the method pamphlet, they cannot be expected, generally, to read and understand them readily. Some will do so, of course. However, the burden of conveying the information of the method pamphlet falls on the shoulders of the supervisor. He will be the one to "read and study" and interpret the results by showing the others how to do it. After he has done so, his subordinates will be more inclined to study the method pamphlet, but this cannot always be counted upon.

### *The Question of Time and Motion Study in the Office*

Though knowledge of what is a normal time for a job is necessary in order equitably to spread the work among employees, it is

not often that a single person does enough work of one kind to warrant making detailed motion studies to improve his work. If possible other means should be used. Employees like to know that their work is important, requires the exercise of personal judgment, and that they have a chance to use their initiative. This laudable attitude is largely destroyed if they are subjected to what they imagine to be speeding-up, though they respond cheerfully to improvements that are offered to make their work easier.

Elementary motion study, of course, should be applied by the analyst as a preliminary to preparing the method instruction pamphlet. Usually, if the method is soundly prepared—with well designed working papers, full use of applicable auxiliary aids such as quick-reference tables, line finders, pegboards, etc.—the employee will do the work in a satisfactory minimum time and take pride in doing so. Given a good method, the time almost takes care of itself.

*Responsibility for the Handling of Office Machines*

In each location where office work is done with the aid of machines, at least a part of the work assignment of some person should be the supervision of the operating procedures of all persons using the machines in that location, regardless of whether they are used for incidental work or are operated steadily hour after hour. An extensive punched card installation with its own supervisor may be excepted from this assignment, but a simple punched card installation need not be. In small offices, this supervisory function may require less than an hour a day.

The person chosen should have at least two qualifications. He should be capable of reading and absorbing instructions and interpreting them to office people by demonstration. He should also be a proficient operator of at least one of the types of machines used and reasonably familiar with all machines in the department. Because of this, it is usually better to recruit the supervisor from among the machine operators than to obtain him or her from the methods and procedures staff, should there be one.

This operating supervisor should check the work habits of new employees particularly and induct them into the ways of the method instruction pamphlets. He should also see that changes of routine are promptly reflected by changes in the method pamphlets. Such a person is also of inestimable help to the office manager in his contacts with manufacturers' representatives.

Modifications of this basic activity may readily be incorporated in the systems and procedures organization of large companies. Basically, however, the operating supervisor is a line employee as distinguished from staff. Delegation of the function as described also pays off handsomely even in small offices where the operating supervision may require only a few minutes a day once it is well under way.

*The Office Produces, Too*

If the company has a method and procedure staff, the related work obviously should be under its supervision, though it may be necessary for that staff to add to its personnel specialized talent selected because of familiarity with office machine operation and application. Maturity of judgment, if not in years, is a requirement also, because often even the most worth-while method must be "battled through." The poorest current method was probably fathered by somebody, and to him it is still the best. This entire field of endeavor is a part of a management program which recognizes that the office end of a business may with advantage have applied to it the same principles of method improvement that have produced such outstanding results when applied to manufacturing production.

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COMING ARTICLES

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